

Open Source in Art:

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Summary

Art formed in the digital age has not yet been sufficiently scientifically studied. The problems of representing artworks made with the help of digital technologies are considerably (inter)connected with the need for a detailed elaboration of stylistic, technical, typological and cultural phenomena associated with such forms of contemporary visual expression. This paper will discuss one uncharted segment of this area which was conceived by integrating open source principles of development and distribution of software into the creation of artworks. The emphasis is set on innovations and alterations which open source introduces in the field of digital art, especially in the categories of author and the original. Through the selected examples the authors examine the possibilities of observing structure and creation of artwork that open source enables. While considering the technical innovations, we will also discuss the continuing and evolving tendencies inherent to art, such as transformation from artwork into art process. The authors offer recommendations on the means of storing, saving and communicating these specific art forms. In their research the authors apply an interdisciplinary approach which includes methodologies of art history and visual communications as well as information sciences.

Key words: art, open source, digital art, author, original, art history, visual communications, information sciences, preservation, museology, heritage

“Computers are bringing about a situation that's like the invention of harmony. Subroutines are like chords. No one would think of keeping a chord to himself. You'd give it to anyone who wanted it. You'd welcome alterations of it. Subroutines are altered by a single punch. We're getting music made by man himself, not just one man.” – John Cage, 1969.

Introduction

When the prehistoric man first started laying pigments of color on the walls of his caves or on the surfaces of rocks in the open, originating the adventure called art that follows mankind still today, he chose freely the material of his new activity out of the nature which surrounded him. Everything that was available to our ancestors was theirs to use. Art, like human beings, traveled a long way from then. One of the latest and most promising fields of contemporary art is certainly the digital art. If we were to apply the circumstances that determine the digital environment on the creative individual from the prehistoric beginning of our story, amongst other problems, we would find him puzzled with the inscription "Trial" over his painting and a required serial key or credit card forms to view the real picture. Not every tool digital artists can find is immediately and completely available to them. And that is nothing unusual. The history of art is in a considerable way determined by the commercial availability of specific materials, for example, the availability of a paint color for a painter or a marble type for a sculptor. The same can be said for computer programs used to produce digital artwork.

Implementing open source principles of development and distribution of software into digital art completely changes the stated characteristics of this medium, enabling free usage of tools necessary for this type of artistic production. Open source as a principle dictates complete access to software source code, resulting with inability to charge it. Several different programmers can cooperate and work on one code and, with the help of Internet, products can be made through the public collaboration where no one charges for his or her contribution to the software development. Anyone can use the resulting software for free. If open source implementation is considered according to the division of digital art into 'art which uses digital technology as a tool' and 'art which uses digital technology as a medium'¹, we can conclude that it does not only modify artwork production but also radically changes some basic categories of artwork, such as authorship and originality. Therefore, the influence of open source principles can be determined on two levels, both illustrated by the example which was also the impulse for the research for this paper – the first animated *open movie* project named "Elephants Dream"². The first level is utilization of open source programs in the creation of every single element used in an artwork, in this case every object used in the digitally animated movie. The second is that the movie itself should be open source, meaning that its every element is publicly available and that everyone who wants to and knows how to can work on it with the open source software. This level will interest us

¹ Categorisation from: Paul, Christiane. Digital Art, London: Thames & Hudson, 2008.

² The project was first named "The Orange Project", and then renamed to "Elephants Dream" according to way Dutch children stories suddenly end, <http://orange.blender.org/> (30th July 2009).

in this paper, which does not aim to make an overview of such artworks but to study the alterations which open source makes in comprehension of artwork itself, the new options it enables, as well as to discuss those tendencies which are inherent to art and which potentate art for a new development in the open source environment.



Picture 1: A scene from *Elephants Dream* animated movie from 2006. It showed that Blender and other open source tools can match visual quality with the commercial solutions in the field of 3D animation.

Though mainly researching unexplored (and not yet emphasized) field of digital art, the paper also tries to open a new possibility of observation of digital art and its classification. Focusing on a concept which is a product of a digital environment and information age, in this case the open source, sets a grounding for creation of a future classification that comes from the nature and the specifics of the digital medium instead of putting digital artwork into drawers made by some older branches of history of art. In that manner, for example, Bruce Wands sorts digital art into: digital imaging, digital sculpture, digital installation, performance, music and sound art etc³. This and similar systematizations have been extremely useful in the difficult task of exploring this relatively new and certainly dynamic area. The attempt to open a new possibility by creating a different focus is not confronting to the current views. Instead it strives to upgrade and relate to them, creating a wider and more applicable framework for elaborating digital art. The concept of open source chosen in this paper can associate to certain examples from very different categories where it equally stands as a characteristic element of distinction, such

³ Wands, Bruce. *Art of the Digital Age*. London: Thames & Hudson, 2006.

as digital animation, software art, net.art, digital printing or flash art. Such selection of artwork will uncover their related attributes much more authentic to the context of reasoning in which they have been conceived than is apparent while they are split up into several different areas.

The interdisciplinary approach applied in this paper will also show a necessity of cooperation between the art history and the information science, working on a subject that is certainly a field of contemporary art, and works of art that are unthinkable without a concept addressed by the information science. Presentation of these works also require fresh museological solutions that are grounded in conclusions of a scientific analysis of contemporary art practice, which, on the other hand, must not exclude the software specifics that produce the very essence of the open source phenomenon.

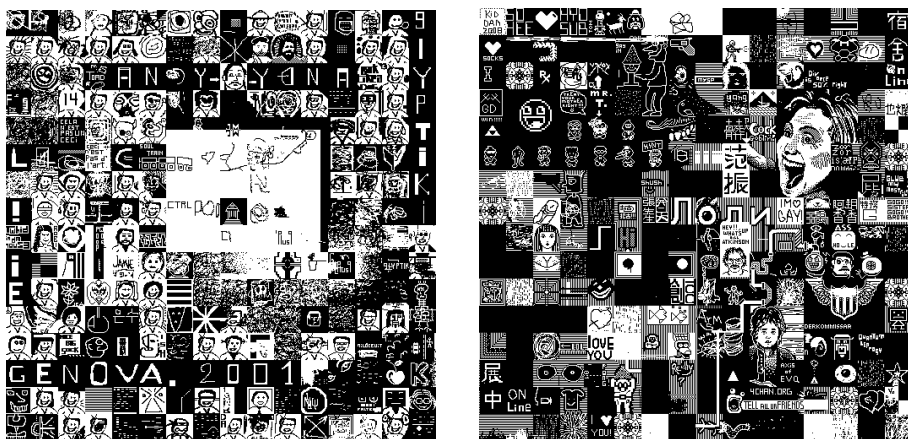
Open Source Artwork

We have established what implementation of the open source software means for a digital artist, primarily in terms of availability of different programs used without financial or temporal limitations. But what does the open source approach to artwork mean for the observer (visitor, viewer)? In fact, it should be noticed that, in a certain degree, it wipes the boundary between the observer and the author by providing the observer with the same authority over the artwork the author had while making it. If we consider the mentioned example of the "Elephants Dream" animated movie once again, it would mean that, considering the complete accessibility of all 3D objects, textures and sounds used in the movie on the internet, the viewer can rearrange or upgrade a movie in any way he or she wants to, or compose a completely new creation out of the same elements. Still, in this case the original artwork is signed, which implies that every new viewer-author creates his or hers own, new original. They are connected by a common starting point and the open source concept without which the artwork would not have been created. There are also examples in which the observers are intervening in the same original made by the initiating author, as can be seen from the case of "Glyphiti"⁴ project by Andy Deck from 2001. and 2006. The author created an image available on the internet, split into smaller units (called "glyphs") which the visitor could select and then make desired alterations to them. The complete initial image is constantly changing by the actions of the visitors, so that each new visitor is not *looking* at the image, one and unique, in a traditional sense, but *watching a live image*, with all its phases and shifts happening in real time.

The matter of discussion is, therefore, a unique original in constant transformation. Interventions in works of art have, of course, been seen before the appearance of digital art as the conceptual art is abundant with such options. Still,

⁴ Deck, Andy. Glyphiti. Versions from years 2001 and 2006, <http://artcontext.net/glyphiti/index.php> (last access: 28 July 2009).

there is another level of open source implementation present in this artwork – one very different from the situations in which the terms *author* and *original* have been found throughout contemporary art. The author, Andy Deck, has determined the characteristics of this digital work of art and of course its very concept through the process of programming. He declared the size and colors the visitors can use – black and white. However, he allowed visitors the possibility to change the source code of this digital artwork. By literally declaring: “...if you don’t like the options given to you, please revise the source code. Copy it. Steal it. Share it. Print it. Pretend it’s yours. I don’t care”, Deck is provoking the possibility of changing the prescribed interventions into the artwork, its very concept. Unlike (merely) encouraging the activity of the observer of a given artwork, he is also promoting him into a coauthor. Such coauthor can then modify the rules of intervening into an artwork which govern the actions of the visitors remaining in the role of active observers. These two categories exist side by side and it is clear that we do not only have an upgrade of observer activities but also a change of role. Programming of digital artwork’s source code is of structural importance for the finite original. For instance, an analogy would be clay modeling for a bronze sculpture model – undoubtedly key process for the final form of an artwork. The founder’s work is correspondent to the web browser reading⁵ the code and displaying the image on the visitors screen. The interventions to the Glyphiti image that the users make would be *en pair* with the, if the sculptor allows it, coloring of the cast sculpture or adding certain elements to it, a hat for instance.



Picture 2: Andy Deck. *Glyphiti*. Left: image from 2001; right: image from 2008.

⁵ In programming the term “interpreting” would be more appropriate, but the term “reading” is selected instead to avoid conflict with the art history terminology.

It is emphasized that the color is determined in the source code⁶. The change of color, for example, black into red, is intruding the concept of the work, like swapping the cold palette with a warm colored one before the painter begins his work. If we take a step back we might also claim that this possibility is also a concept. However, if we look wider we will find that this concept did not come directly from the author of an artwork, and neither did its name. In the digital world that concept has a familiar term – the open source⁷. It is a concept of an entire community which has public creation as a principle. In the case of the Glyphiti project it is perfectly clear who is the author, just as is the possibility of co-authorship for anyone who wants to participate and has a minimum knowledge in informatics to do so. If we return from the conceptual level back to the very image, we can establish that its space is also intended for collaboration and group work. In so doing, the co-authors working on an image are not necessarily aware of each other, and are not obliged to know each other, which is nothing unusual for a digital environment. Therefore, a completely open source digital work of art is immersed into public which is forming it on all stated levels.

Art Tendencies in Open Source Environment

Area opened by the open source concept has provided grounding for developing some already existent art tendencies, as well as the creation of certain new characteristics that would not have been formed without it inside the frame of digital art. During the twentieth century *artwork* has in many different ways transformed into an art *process*, whether it is in forms of artistic expression with immanent temporal dimension, such as performance or happening, or in innovations of "timeless" artistic fields, such as those made by Jean Tinguely in the sculpture with his works of limited time duration. One characteristic of these aspirations is the determined time span of a process. In Tinguely's works, "Homage to New York" (1960.) and "Study for an End of the World No. 2" (1962.), the sculpture is existent until its own mechanism destroys it, and in every performance or happening it is possible afterwards, and sometimes even in advance, to determine its duration. The "Glyphiti" project is already detected as a process running in real time, and it can be added that this aspiration has lost its need for temporal determination when found in an open source environment. Because of the open source availability the image is subject to constant modifications. Theoretically, the open source art process available on the internet does not have to end. "Art is never finished, only abandoned" said Da Vinci. The continuation of such process is not dependent upon the natural limitations of the author, performer or observer, weather conditions or day and night cycle be-

⁶ The source code is written in JavaScript.

⁷ The term has been widely promoted after a summit in April 1998 organized by Tim Riley under the name of "Freeware Summit", later referred to as the "Open Source Summit".

cause it is always available in different parts of the world through the Internet. If the dynamic of morphing is great enough, the observer is greeted by a new form upon every new visit, thus raising interest of the public. The possibility of achieving such open source art process that has a continuation of morphing (instead of temporal determination) is real, which is proven by the fact that open source exists, functions and integrates creative people even on a much more commercially demanding area of software development. Furthermore, these solutions can be dominant in their, often highly sophisticated, areas like, for instance, the Apache web server⁸ in its domain. The technological and social possibilities are there. The challenge lies in creating a process of adequate quality and involvement.

Such creations could also intensify an interesting possibility of form that changes context independent of the actions of the original author. The elements of a digital artwork that are originally used in creation of one artwork, or even a whole artwork itself, can be found in another artwork of a completely different character. In a certain sense, this is an extension of a postmodern tendency to quote, and its subsequent recontextualization. If an art process of open code available on the Internet outlives a certain period of some visual style domination it will continue to change according to style applied by the future visitors and co-authors. Theoretically, this process does not need to have an end, and it realizes an artwork adopting to change of context, social conditions, and spirit of an age. From the historic perspective, it might also be concluded that a unique artwork is spanning across several different periods. Notable is an analogy with a drama screenplay divergently adapted during the course of history.

If the open source license does not prevent it⁹, the public work can also be used in a work of commercial or private function. The characters of “Elephants Dream” could be found in some advertising campaign, with the only condition of providing attribution to the original project. This possibility works two ways – a commercially successful digital artist can also contribute to the open source community. Joshua Davis has worked for brands such as Nokia, Nike and Diesel, and he was also amongst the first to offer open source flash files over his webpage Praystation.com. He is significant for observation of the concept of originality in the digital art because he tries to restore its uniqueness. It has been lost by vast possibilities of multiplication in digital art, both on the level of the “final original” and on the level leading to its concretization (like the digital model of a sculpture that can cease to be unique by a simple copy-paste

⁸ Lerner, Josh; Tirole, Jean. Some Simple Economics of Open Source // The Journal of Industrial Economics. Vol. 50, No. 2 (Jun 2002), pp. 197.

⁹ Often, the open source licenses do not approve commercial usage, like the Open Art License version 1.0, subsection 2: *The reuse is not for profit*. <http://www.three.org/openart/license/index.html> (last access: 3 August 2009).

method¹⁰). Davis creates series of several thousand commercial posters that are changed before printing by an algorithm. His model, digital template for print, has in its code the instruction of uniqueness.

The strength of the open source idea has also affected the content of artworks. Narrative specifics and open ending of "Elephants Dream" cannot be left unnoticed. In it, the older character, Proog, is trying to explain to the younger one, Emo, the abstract Machine they are found in. We can comprehend it as a metaphor of any idea or a concept. He is doing so by *forcing* his view of the idea, instead of *sharing* it, which results in a physical conflict. The open ending is a call to the public to join in and make new versions of the movie. Open source concept by itself is also politically and economically provocative and could thus be dearly used in the art world. Perhaps the best example of this orientation of open source art is the project CarnivorePE by Alex Galloway and the RSG (Radical Software Group). It is inspired by the DCS1000 software used by FBI for surveillance of e-mail and communications, previously known as Carnivore. The RSG's Personal Edition open source version, instead of collecting information about the suspects, is transforming electronic information into vibrant images and sound, generating art instead of incriminating evidence¹¹. Digital artists are using client-server principle, creating clients which produce the desired effects from information given by CarnivorePE server. It is left to the artist to interpret the information through their clients. The Guernica¹² client is turning the web into a dystopic world of oil pumps and rockets, while the Amalgamatosphere¹³ client is creating a live and vivid vision of network activities.

New Challenges of Communicating and Preserving Digital Art

Institutional preservation and communication of digital art is a difficult task because the museum institutions have grown on a *white cube* model of functioning, while the new challenges call for a *wired cube* approach. It is important to have in mind all the analyzed specifics of open source artwork while considering these problems. Orientation to the Internet has made art easily accessible outside institutional channels, communicating directly to the audience without the need of taking a conventional journey through museums or galleries to their visitors. On the first glance it might appear that just as open source blurs the

¹⁰ Čučković, Boris. Razmatranje skulpture ostvarene digitalnom tehnologijom // Symposium "Original u skulpturi", Galerija Antuna Augustinčića. Klanjec. 4-6 June 2008 (in print).

¹¹ Mirapul, Matthew. Cybersnooping For Sounds & Images, Not Suspects. // New York Times, 1 October 2001, online edition: <http://www.nytimes.com/2001/10/01/arts/design/01ARTS.html> (last access: 3 August 2009).

¹² Creative duo Entropy8Zuper!; <http://entropy8zuper.org/guernica> (last access: 3 August 2009).

¹³ Davis, Joshua. Hall, Brandon. Shapeshifter; <http://ps3.praystation.com/pound/assets/2001/11-20-2001/index.html> (last access: 3 August 2009).

boundary between the author and the observer, it does so between the author and the curator. Authors usually create their own exhibition space on the Internet in the form of a web page or a web site. Still, that boundary is not completely lost and there is a great need for an institutional framework solving the problems of preserving these artworks. One of the important efforts in this direction has been made by the Solomon R. Guggenheim Museum in New York by creating an archive of new media art – Variable Media Network¹⁴.

Considering the close bonds of digital art with rapidly advancing technological achievements, making obsolescence of current solutions very probable, institutional aid in preserving certain characteristics of open source art is necessary. Perhaps the best example of this need is preserving the possibility of running an indefinitely long art process that is endangered by outdating of software and hardware environment it is made on. This concept is surpassing the limited duration of medium, especially in the circumstances of constant web browsers', and their plug-in, development. Same files which are readable today can become unreadable tomorrow, and protocols making them accessible can be replaced by new ones¹⁵. The solution to this problem Mark Tribe sees in applying four methods¹⁶: *documentation* (screen captures, artist diagrams, installation instructions and statements), *migration* (updating work to accommodate newer technology and file formats), *emulation* (running projects through additional software that allows them to work on newer hardware), and *recreation* (remaking the artwork for a new technical environment). In the Guggenheim Museum the authors are entitled to choose the modes of migration or recreation of their code in the future.

But for open source art, the communication between authors collaborating on the development of an idea is just as important as the communication between the author, his work and the observer. The Open Art Network¹⁷ has, therefore, developed principles enhancing this communication, and also working preven-

¹⁴ Variable Media Network. <http://www.variablemedia.net/> (last access 5 August 2009).

¹⁵ For further discussion on digital preservation issues see:

Thibodeau, Kenneth. Overview of Technological Approaches to Digital Preservation and Challenges in Coming Years // *The State of Digital Preservation: An International Perspective*. Washington, D.C.: Council on Library and Information Resources (CLIR). July 2002, pp. 4-31, <http://www.clir.org/pubs/reports/pub107/pub107.pdf> (last access: 25 October 2004).

Stančić, Hrvoje. Arhivsko gradivo u elektroničkom obliku: mogućnosti zaštite i očuvanja na dulji vremenski rok // *Arhivski vjesnik*. 2006, No. 49, pp. 107-121.

Stančić, Hrvoje. Očuvanje elektroničkih informacijskih objekata: arhivi, knjižnice, muzeji – zajednička koncepcija // Katić, Tinka (ed.). 7. seminar Arhivi, knjižnice, muzeji: mogućnosti suradnje u okruženju globalne informacijske infrastrukture. Zagreb: Hrvatsko knjižničarsko društvo. 2004, pp. 26-35.

¹⁶ Wands, Bruce. *Art of the Digital Age*. London: Thames & Hudson, 2006, pp. 206.

¹⁷ Open Art Network. <http://www.three.org/openart/> (last access: 5 August 2009).

tively on certain problems of saving and (potential) future usage of the code. The basic principle is that program should have a modular structure, so it could be easily changed and its components used in other projects, and that the code should not be procedural, but object-oriented. Unintelligible code is not contributing to the open source community, so detailed comments following the code are welcomed. Furthermore, for the open source movement a search engine of such meta-programming, helping artist beginners in programming, would be a great progress.

The main principle of preserving the original open source art process should contain the requirement of preserving the availability of its code to the public so it can continue to live on that level. This alone will not be satisfactory enough without emphasizing the importance of documenting the process as well. In determined time intervals the phases of such artwork should be recorded, so that the answer of the public to the concept is also preserved. A good example would be the documentation of the Glyphiti image in the form of a .gif stream. The influence of the open source on the very institution of the museum is also interesting. OSMOSA¹⁸, an open source museum of open source art, exists in the virtual world of Second Life. Anyone can add, modify or remove objects from OSMOSA. Likewise, anyone can do the same with the very elements of the museum building. It certainly represents a challenging environment but it completely follows the terms of open source principles.

Conclusion

Implementation of open source principles of software development has radically changed the important categories of digital artwork. Enabling a never before seen level of co-authorship, it has included the public into the act of creation much more than it was the case with active observers of artwork invited to do interventions in it. A completely available code allows structural and conceptual modifications of digital artwork, and the redefined term of *the original* not only does not stream towards uniqueness (as is the case with the rest of digital art), but also invokes and provokes multiplications and its own usage in realization of other visions and ideas. That is certainly a stimulation for specific tendencies of contemporary art that have found new possibilities inside the open source framework, such as achieving artwork as a process, or creating an artwork that is adopting to the change of context by the public itself, without the acts of its originator. Preservation and communication of these complex concepts will be a demanding mission of conservation and museology of the twenty first century. The main task of the scientific elaboration of the digital art lies in examining and discussing the phenomenon in accordance to the way a specific concept was

¹⁸ Open Source Museum of Open Source Art. <http://osmosa.blogspot.com/> (last access: 6 August 2009).

formed, never neglecting the categorization according to characteristic branches of contemporary art, but also, if there is a need, not running from the creation of a new classification based upon creative principles underlying a certain group of digital works of art.

Evading the dominant corporative principle of developing the digital possibilities, the open source approach is relying on public creation and idea sharing to accomplish the designated goals, benefiting the initiator of the project as well as the whole community. This seemingly utopian idea is functioning, a fact backed up not only by software development success, but also by digital artwork made through open source collaboration presented in this paper. The prerequisites have been set for creation of a public work of art that is formed by public itself, or in terms with the John Cage quote from the beginning of this paper – an art made by man himself, not just one man. All these possibilities are a great challenge, and also a glimpse of an interesting and creative future of artistic creation.

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